

Moderators' Report/  
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January 2013

GCE Engineering (6932)  
Paper 01

The Role of the Engineer

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## **Unit 6932\_01**

### **The Role of the Engineer**

#### **Administration**

Around eight centres submitted packs of samples ranging from one to ten candidates, being a total of only forty or so portfolios, making this report a little less general, although there were points to note about most of them.

Most samples were received by the deadline, and approximately half of the centres had to be contacted for authentication forms or administrative issues. Centres are encouraged to make use of the available technologies by providing a regularly monitored email address, possibly to the examinations officer, so any issues can be resolved quickly and efficiently.

Most centres submitted well presented portfolios, being A4 paper in portrait mode, and held together using a single treasury tag through the top left hand corner. The authentication form should be attached at the front of each portfolio, with the mark record sheet (MRS) placed at the very front, allowing a remote moderator to select the moderation sample using the completed boxes thereon.

Most MRSs contained some annotation, but mostly in the form of evaluative feedback to, or about, the candidate. Please note that page numbers are generally sufficient here, with annotation throughout the portfolio indicating where the evidence addresses specific criteria and performance verbs. For example, by writing; 'explaining - MB3', 'describing – MB2', 'justifying – MB3', etc, as appropriate, to allow effective communication between an assessor and a 2<sup>nd</sup> marker or moderator, indicating where it was felt that the evidence addressed each mark band, leading to the score awarded.

#### **Assessment**

For unit 2, candidates need to make regular contact with a chosen engineer and investigate her/his role in relation to the product or service provided. Most candidates tended to provide evidence that at least one visit had taken place, although, a single visit can rarely allow effective investigation of the engineer's role across the full unit specification. Follow up meetings, work shadowing, regular email, or other contact is essential to achieve a fuller understanding of her/his role, and perhaps requesting for feedback for sections 'e' and 'f', to improve the relevance of the report.

Candidate work must include evidence of:

#### **Assessment Criteria (a)**

The activities undertaken by the engineer in the design and/or manufacture of the engineered product or service.

Company history does not attract marks, so should not be written about. The engineer's education and employment history should also be kept to a bare minimum, including only items which are currently relevant and actually addressing the assessment criterion. It was noted that in some portfolios details of a range of engineers and their roles/definitions, and even full product ranges of manufacturers were still being included, and centres are reminded that this does not form a part of the assessment of this unit.

An introduction of up to a half side of A4 is generally adequate – giving the name, possibly the qualifications, job title, etc, of the chosen engineer, with details of when and how they made and maintained contact. One or two portfolios contained evidence which addressed the whole unit within this criterion, with it being repeated again under each other criterion. At AS level, candidates should be taught the planning and writing skills required to maintain a clear focus on the assessment grids.

### **Assessment Criteria (b)**

Current available technologies used by the engineer including why they were selected as being appropriate to the process.

The specification for this unit identifies a range of items which should be included, as a minimum, as they are relevant for most engineers in most industries. Candidates should be reminded that 'technologies' do not mean 'machinery' and it means much more than 'computers'.

A few portfolios contained articles from the engineer's place of work, details of equipment and technologies in use, etc. Where these are relevant, they should be described, their relevance and use explained, along with justifications for these being used instead of alternatives. Centres are reminded that only the candidates own written work can attract marks. For this reason, there is very rarely any real need for any appendices, other than for moderators to check any references which may have been used within the main body of the report.

Where candidates wrote about all items used by all the company, they should only be awarded marks for any items which are in any way relevant, to the role of their chosen engineer.

### **Assessment Criteria (c)**

How appropriate legislation and standards influenced the design and/or manufacture of the engineered product or service.

The assessment grid starts by requiring them to 'identify legislation' or 'standards' which affected the product or service. Very few candidates identified these, but instead referred to 'health and safety standards', or 'electrical standards', etc. Standards and legislations each have a title, which should be quoted to identify them. BS8888 is the current general drawing standard being used by the majority of engineers; ISO9001 is in

use at many companies, and likely to affect most engineers. ISO14001, and its family, also relate to many industries – but this has seldom been mentioned in this unit. Regularly, candidates report that their engineers work to ‘a good standard’. All products are made to identifiable standards and the report must include only real and relevant ones.

### **Assessment Criteria (d)**

How appropriate health and safety standards used by the engineer influenced the design and/or manufacture of the engineered product or service.

Regularly, candidates mix this section and section ‘c’ and assessors and moderators are always advised to award marks for all relevant work, where ever it appears, due to the links between standards, legislation and health and safety standards, or legislation, in most industries. Several candidates still refer to ‘Risk Assessment Regulations’ which indicates some confusion, or lack of clarity, about the Health and Safety at Work Act, The Management of Health and Safety at Work Regulations, etc. Identifying ten health and safety standards, or items of legislation, should be possible by any engineer and at least five should be known by any engineering student, but most do not include such details. Many are common to all industries – PPE Regulations, Noise at Work Regulations, COSHH, LOLER, Manual Handling, etc. Some candidates mentioned RIDDOR, which is fine, as long as it is made relevant to the product or service and the role of their engineer. A few candidates included numerous pages of detail about COSHH and RIDDOR, which is good research material, but did not provide any information about how it affects the product, the service or their chosen engineer, which is required in order to achieve marks in the higher mark bands.

### **Assessment Criteria (e)**

Evaluation of the performance of the engineered product or service you have investigated for it being fit for purpose.

After spending time with an engineer, investigating the work carried out, candidates should be in a position to apply some of the knowledge they have gained, including that from other qualifications and units and research, in order to evaluate some aspects of the role of their engineer. The evaluation should include the fitness for purpose of the product or service, bearing in mind that the Quality of Written Communication is being assessed in this section, so a good standard of spelling and grammar, as well as clear and correct use of technical language is essential. More than one centre used what seemed to be a score chart to evaluate each activity numerically, then worked out an average – with very little written communication, resulting in some candidates missing the opportunity to achieve a proportion of the available marks.

The mistake made by a few candidates was to write an appraisal of the engineer, the product, the service or the whole company or industry, which limited the marks they could have achieved. During selection of engineers

and products, care is required to ensure that candidates do not select aircrafts or large sea going vessels, as they will be unable to evaluate this and suggest improvements. A door handle on a car or the mounting brackets for bus seats, etc, have been seen in previous years, and they generated excellent and realistic evaluations.

### **Assessment Criteria (f)**

Suggestions for possible modifications to improve the performance outcome of the engineered product or service.

If the choice of engineer/product/service did not involve a consideration of the range of activities, technologies, legislation and standards which may be in use, then section 'e' will have proved very difficult – making section 'f' more difficult. For a very comprehensive and large item, such as an aircraft, or even an aircraft wing, an effective evaluation is unlikely for non-post-graduates, and the improvements required tend to be trivial and irrelevant to the engineer's role.

Some candidates tended to mistakenly evaluate all their work for sections 'a' to 'd', then for 'f', they suggested something which is totally irrelevant to their investigation and the assessment criterion, by saying how the company would be better making something else, or moving to a different place, etc.

Where the placement or work shadowing is of an engineer which allows good coverage of the previous sections, then 'f' can always include trying to do or make something cheaper or quicker, and most of the more successful portfolios did just that.

When a candidate has worked with a design engineer, the content of this section can easily become the production of a different design, which is not what is required for this criterion.

In general, the performance at this January series is generally reflective of that at any other, with far fewer entries than the summer and may even include candidates who are re-taking the unit. The progress made by centres in the few years since GCE Engineering started is quite encouraging, and centres are encouraged to make use of the moderator report (E9) and support services provided by Edexcel.

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